COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Jubilee of the Information Bulletin on Variable Stars

Konkoly Observatory
Budapest
28 September 2011

HU ISSN 0374 – 0676

Jubilee Issue of IBVS: Half a Century of Variable Star Science Publishing

7 April 2011, Konkoly Observatory

INTRODUCTORY REMARKS

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As a young assistant I entered service at the Konkoly Observatory on August 1, 1961, so I was witnessing the birth of the Information Bulletin on Variable Stars.

At the meeting of the IAU Commission 27 (Variable Stars) held during the Berkeley General Assembly in August 1961 the participants expressed their wish for quicker ways of communicating data on newly discovered variables and special phenomena connected with variable stars. After some discussion the meeting decided to establish an Information Bulletin on Variable Stars, and accepted the offer of Prof. L. Detre that the Konkoly Observatory would undertake the editing and publishing of this bulletin. Nevertheless the Commission has followed the fortune of IBVS with keen attention and throughout the years one of the most important functions of the Commission has been the sponsoring of this bulletin.

Originally the IBVS did not intend to be a new journal for articles on variable stars, instead its main purpose was the rapid communication of discoveries, interesting observations, requests for photometric and spectroscopic observations, etc. However, it turned out soon that there was a real need for publishing short notes and results on variable stars of current interest and besides its original aims the IBVS had a journal-like function too. Although the Variable Star Commission brought the IBVS into existence, it has been a forum for the observers of eclipsing binaries too. This policy was always wholeheartedly supported by the members of the IAU Commission 27. About half of the published issues dealt with close binary stars. This fact was de jure acknowledged in 1992, when the IBVS became the official publication of IAU Commission 42 (Close Binary Stars) as well.

From the very beginning speed was essential in editing and publishing the IBVS. The editors strived for promptness of publication which was of importance to authors and readers alike, and much effort was made to maintain the turn-around time of three to four weeks. The co-operation of authors helped, most of the manuscripts were submitted in camera-ready form in the pre-electronic era. Of course, this resulted in non-uniform type setting. Moreover, the printing technique was very poor in the beginning. Usually

lengthy tabular material was not accepted and the authors were always asked to be concise and not to exceed the one-two page limit, otherwise promptness would be jeopardized.

The scientific level of the IBVS has always been a vexed question discussed at each meeting of the Variable Star Commission. In order to minimize the duration of the publication process, the majority of the manuscripts submitted for publication have been refereed by the Editors. They have always strived for prompt editorial decisions concerning the acceptance of a paper and have considered the original intention, the rapid communication of vital importance. A formal referee system would have certainly caused undesirable but unavoidable delay. Some measures, however, had to be introduced for the protection of the scientific level of the IBVS. Visual observations impossible to verify were not accepted and in questionable cases an informal referee system was used.

In the meantime the IBVS was entrusted with an important task. During the Prague meeting of Commission 27 (General Assembly in Prague, 1967) a proposal was presented by W.J. Miller that the Moscow bureau for GCVS should modify its procedure of assigning variable star designations: the new variables should be named already before a new Supplement to GCVS was completed and these new designations should be made available for the interested observers. It was suggested that use might be made of the IBVS for this purpose. This notion proved to be a very useful idea: since 1968 the IBVS has regularly published the Name List of Variable Stars.

According to the original intention of the founders the issues of IBVS were mailed, free of charge, to all members of IAU Commissions 27 and 42 and to the astronomical institutes and observatories. At the time of the Berkeley General Assembly in 1961 there were only about 75 commission members, but this number was growing continuously. At the end of the eighties the bulletins were mailed (mostly airmailed) to more than 600 addresses. This proved to be a heavy burden and the financial resources of the Konkoly Observatory did not allow to continue this service. A way out had to be found. In this respect the meeting of the Variable Star Commission during the 1988 General Assembly in Baltimore proved to be crucial. The Commission took in the situation, and the new President of the Commission, M. Breger made serious efforts and gave support to overcome the difficulties.

The meeting of the Variable Star Commission during the Buenos Aires General Assembly in 1991 came to a serious decision. E. Milone suggested that the Commission might wish to appoint an editorial board to assist with the publications of the Bulletin. This motion was seconded and accepted by the members, and the Editors proposed an Editorial Board of L. Balona, M. Breger, M. de Groot, D.S. Hall, R. Koch, J.M. Le Contel, J. Percy, M. Rodono, J. Smak and C. Sterken (chair). The constitution of the Board also reflected the fact that IBVS was co-sponsored by Commission 42. Following the first meeting of the Editorial Board in Vienna, November 1991 a new circulation policy was introduced in 1992. Instead of free circulation, the IBVS could be obtained on a subscription basis for a nominal fee which covered only the mailing cost. This unavoidable measure did not cause any interruption in the publication of the Bulletin: the number of subscribers was around 300 at the beginning. The IAU Executive Committee kindly provided a grant of 1000 US$, a sum that allowed to keep 25 East-European and Asian astronomy libraries on the mailing list for two more years (Fig. 2).

C. Sterken gave enormous help with handling the financial and administrative matters related to the IBVS through the international Working Group ,,Astronomy Research and Education Support" for five years until the Editors could organize the necessary financial and administrative conditions in Hungary.

ON THE CREATION OF THE IBVS EDITORIAL BOARD IN 1991

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In February 1991, L. Szabados and K. Oláh, the 1990–2000 Editors of IBVS, issued an important Editorial Note that alerted the astronomical community about the dwindling financial support that was seriously menacing the future of IBVS. The Bulletin, in fact, had been edited and published at Konkoly for almost thirty years without any complication, and the printing and mailing costs had always been covered by the annual budget of Konkoly Observatory (as provided by the Hungarian Academy of Sciences).

The main problem was that the budget had never been adjusted for inflation, and that there was no additional support available to cover the increasing production costs. Therefore, the Editors were forced to adopt two major changes in the distribution policy of the Bulletin, viz.:

1. The policy of the first decade, i.e., sending a personal copy to each member of IAU Commission 27 had already been abandoned, and now the mailing list would be confined to observatory libraries and to institutes at university departments, in exchange for their own publications. Individual subscriptions, however, would not be considered any more. The Editors, though, explicitly declared that anyone could freely copy and distribute IBVS issues without seeking prior consent from the publisher.
2. The other major constraint was the introduction of a page charge fee for any issues that exceeded the canonical 4-page format of the Bulletin: any additional pages would be charged a fee of US$10.– (except for the namelist of newly-designated variable stars).

In addition, the Editors drew the attention of potential authors to two typical editorial problems that they were facing: the poor quality of the computer-generated graphs, and the inconsistent use of references. So, they urged authors to prepare their manuscripts with the same care as if their destination would be any other journal with strict editorial rules.

Printing costs were indeed a growing problem, because the traditional offset lithography printing was very labour and cost intensive: first a (negative) image of a page was produced on film, and then the film was used to create another image on a metallic printing plate, which was then mounted on a cylinder on the printing press. The inked plate will then produce another negative image on a rubber mat that, finally, prints the correct image on paper. Fig. 1 shows an example of one of the last plates created and used at the printing shop of Konkoly Observatory (for IBVS issues 3852 and 3853). One plate could hold only 4 pages.[1]

The Editorial Note of February 7, 1991, did not create much disruption, though it did bring some commotion among the private subscribers, especially those that had no easy access to a professional astronomical library.

In June 1991, shortly after that Note appeared, I carried out an observing run at the *High Altitude Research Station Jungfraujoch* in Switzerland. As that observatory is located at 3600 m above sea level, the safety rules required every observer to be accompanied by at least one other person. It so happened during this run that I had the company

[1]IBVS has been produced fully electronically since mid-2008.

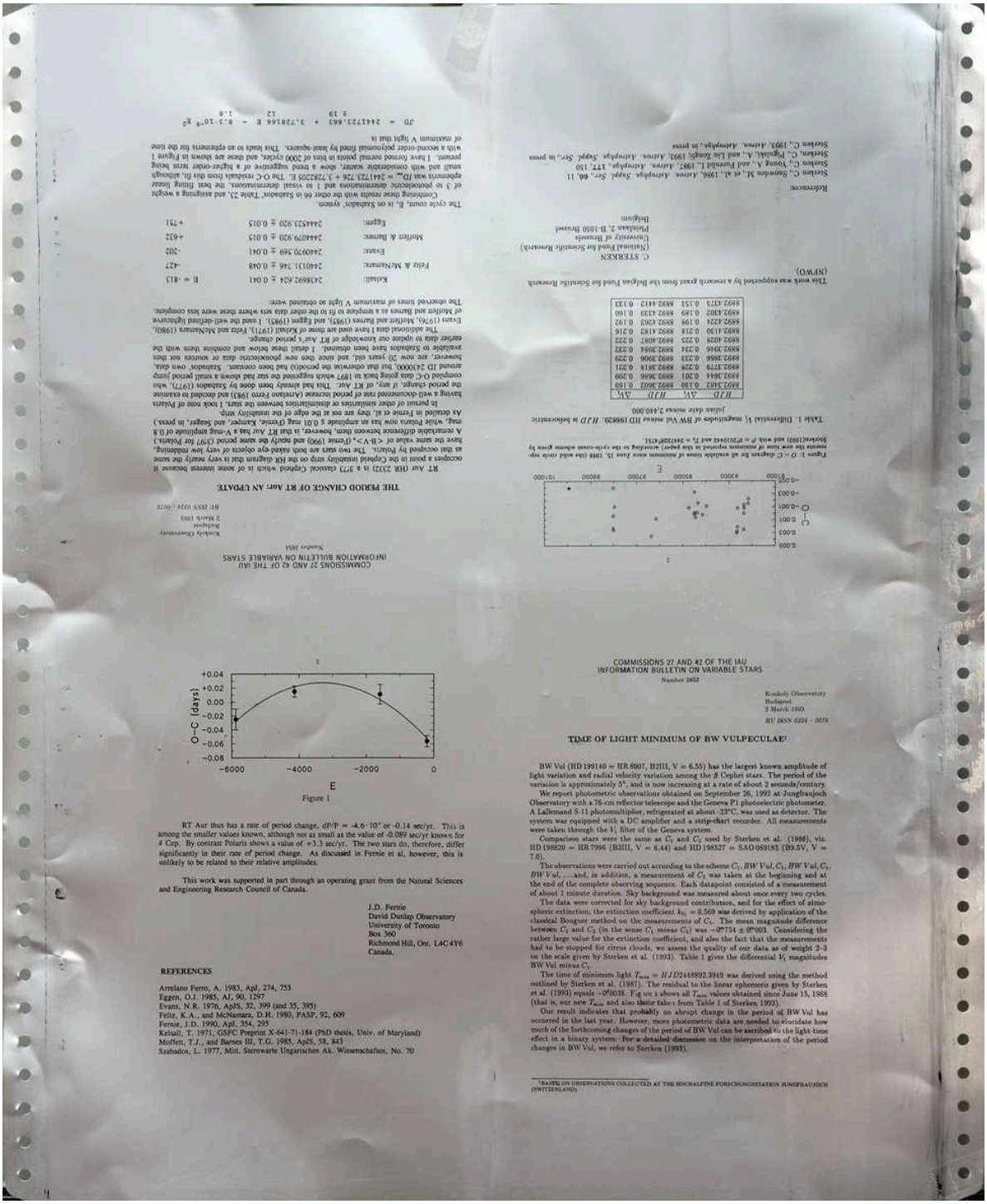
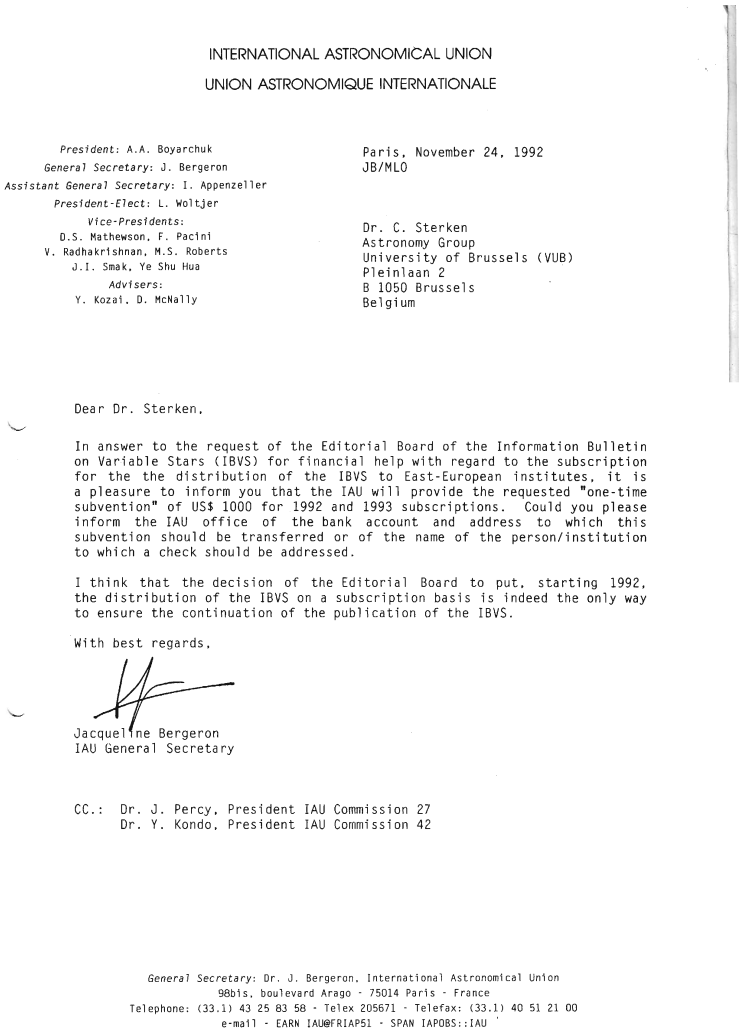


Figure 1. Reproduction of IBVS vintage metal printing plate featuring issues 3852 and 3853.

of an amateur astronomer, who drew my attention to the developments at IBVS, and who suggested that perhaps the amateur community should take over the publication of IBVS. I promptly called Michel Breger, who was the President of IAU Commission 27 (of which IBVS was the official publication), and proposed that some actions should immediately be taken to help IBVS to continue its important role as a fast and accurate disseminator of crucial information on variable stars. The two vehicles for such support I envisaged were financial support from IAU (Fig. 2) and other sources, and the creation of an international Editorial Board.

And so it happened: on November 13, 1991, IBVS Editors László Szabados and Katalin Oláh met with Michel Breger, Mart de Groot, Jean-Michel Le Contel and myself at Vienna University Observatory to discuss all aspects of the recovery operation. That kernel of the Board decided to introduce an annual subscription fee (of about 12 EUR) as from 1992 on, while sticking to the free-of-charge 4-pages-per-issue policy.



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Paris, November 24, 1992
JB/MLO

Dr. C. Sterken
Astronomy Group
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Belgium

Dear Dr. Sterken,

In answer to the request of the Editorial Board of the Information Bulletin on Variable Stars (IBVS) for financial help with regard to the subscription for the the distribution of the IBVS to East-European institutes, it is a pleasure to inform you that the IAU will provide the requested "one-time subvention" of US$ 1000 for 1992 and 1993 subscriptions. Could you please inform the IAU office of the bank account and address to which this subvention should be transferred or of the name of the person/institution to which a check should be addressed.

I think that the decision of the Editorial Board to put, starting 1992, the distribution of the IBVS on a subscription basis is indeed the only way to ensure the continuation of the publication of the IBVS.

With best regards,

Jacqueline Bergeron
IAU General Secretary

CC.: Dr. J. Percy, President IAU Commission 27
Dr. Y. Kondo, President IAU Commission 42

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Figure 2. Letter about an IAU grant to help East-European countries to receive IBVS free.

The Business Meeting of Commission 27 at the XXI IAU General Assembly resolved unanimously to set up an Editorial Board to assist Konkoly Observatory with the publication of IBVS. The Board members were L. A. Balona, M. Breger, M. de Groot, D. S. Hall,

R. Koch, J.-M. Le Contel, J. R. Percy, M. Rodono, J. Smak, N. Samus and C. Sterken (Chairman), and the Editors L. Szabados and K. Oláh. The task of the Board was to help the Editors in further raising the quality of the Bulletin, specifically by introducing a stricter refereeing policy. This initial Editorial Board remained in function during a full six years, after which its composition was adjusted every three years, i.e., at the pace of the IAU General Assemblies.

Figure 3. The first IBVS archival CD, published in 2000.

The measure of introducing a subscription price, evidently, slimmed down the list of subscribers: a number of people – mostly inactive retirees – did not renew their subscriptions, but the list of subscribers eventually grew and stabilised with the increasing quality that the Bulletin was offering, not in the least because the financial revenues allowed acquisition of more performant office equipment.

The offset printing was eventually abandoned, and replaced by the much more economic digital printing, a situation that opened up other perspectives, among which the creation of a digital archive containing all IBVS issues from number 1 on. Scanning equipment was acquired, and with the help of volunteering operators, the entire paper archive was scanned and produced on CD-ROM. The first CD (1961–1994) was published in 2000, the second volume (1994–2000) appeared one year later (see Fig. 3). The entire archive is now online at `http://www.konkoly.hu/IBVS/issues.html`, but copies of the CDs are still available at Konkoly Observatory.

By the time of this writing, the Bulletin is half a century of age, and has developed into a truly *Open Access* scientific journal, with no page charges (except for excessively lengthy papers): it is a true example of really open scientific communication, with a tremendous visibility, thanks to the Technical Editor András Holl. IBVS is a standing tribute to the proactive and visionary builders L. Detre and B. Szeidl, who carried on their project with little regard of what is achievable with the least possible financial support. And to the later Editors, who fulfilled their scientific and technical tasks, without any financial reward in terms of indemnities, salary bonuses or travel grants, and who often paid for their editorial duties with their personal science-production time.

IBVS 1961-2011 — EDITORIAL EXPERIENCE

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First of all, here follows the list of the scientific editors of IBVS since the first to the last printed issue.

1961-1968	1	-	300	Detre
1968-1975	301	-	1000	Detre, Szeidl
1975-1983	1001	-	2400	Szeidl
1983-1987	2401	-	3000	Szeidl, Szabados
1987-1990	3001	-	3500	Szabados, Szeidl
1991-2000	3501	-	5000	Szabados, Oláh
2000-2011	5001	-	6000	Oláh, Jurcsik

In the early times there was no refereeing system in IBVS, since it was established as a newsletter rather, than a journal. But after some time, with the increasing number of poor contributions more rigorous selection was initiated, which ended up in a full refereeing system introduced in 1992. That, of course, created new problems.

However, the first words should be sincere thanks to all those referees who sacrificed their time to judge our manuscripts, to a journal, which never got a citation index due to its irregular publication scheme - at least that was the explanation we received from Thomson Reuters, after declining our applications twice. Up to the day of the memorial meeting in 2011 April, the number of the total citations the nearly 6000 IBVS issues received is 22319. More statistics about the impact of IBVS is found below.

But first there are a few thoughts about the refereeing system. We find four possible scenarios, of which three are manageable, and the fourth gave most of the trouble the editors had to deal with.

1. Good paper – good referee. This is the easiest point, the editors act mainly as postmen.
2. Good paper – bad referee. This is a bit troublesome, but since the paper is good, the publication is done using our editorial experience, and sometimes with the help of strictly anonymous colleagues.
3. Bad paper – good referee The first words of thanks above are due to mainly those excellent colleagues who helped us to get rid of wrong contributions, several times after 2-3 iterations. The authors of such papers are sometimes very aggressive and it is indeed hard to keep a polite style in the correspondence. The Board sometimes helped us in such cases. But the worst case is the last one:
4. Bad paper – bad referee. Of course no editor knows all the good and available people for refereeing, so the choice from an author list of the given subject is risky, and may end up in the worst scenario. This is the story behind the worst papers published, since many times there is no way out of the situation.

Further problems we encountered were some typical errors which were repeatedly present in a lot of manuscripts. Instead of writing one-by-one to the authors we edited

announcements about the requirements. One of these was ,,On the determination of times of minima/maxima of variables from photometric data". It is too bad we had to explain basic principles about accuracy of measurements; we think this is the consequence of using computers automatically without deeper knowledge of the data themselves. Although, unfortunately, such results are regularly published by major journals with high impact factors, we tried to keep IBVS free of such data.

Of course, the authors consider their paper very important. Especially, when amateurs ,,discover" new variable stars (from which thousands are discovered every year or even month). An example: one such discovery needed five (5!) scientific mails from us in two days. The question naturally arises: is it worthwhile? The answer is, of course, no. On the other hand, we were happy to correspond a lot with authors to whom we could help to make their interesting papers publishable and who were ready to accept the advice.

As we already noted above, IBVS received 22319 citations concerning ADS. Of course there are some very well cited papers, and the Table below shows a list of the first few of such papers. Since IBVS has been publishing lists, like Name-Lists of Variable Stars for the GCVS (General Catalogue of Variable Stars) and times of minima of eclipsing binaries, those lists naturally get more citations than a paper on one (or a few) object(s).

Most cited lists:

IBVS No.	year	subject of the list	citations
2681	1985	Name List	525
3058	1987	Name List	116
4148	1995	Database of Galactic Cepheids	89
4659	1999	Special Name List	87
937	1974	Times of minima	80
1426	1978	F,G,K Type Dwarfs and Subgiants with H&K Emission	73

Most successful papers:

IBVS No.	year, subject	citations	remarks
1961	1981, on R Aqr	70	symbiotic star, 621 papers in ADS
1277	1977, on RY Sgr	63	R CrB star, 313 papers in ADS
1611	1979, on AG Dra	48	symbiotic star, 398 papers in ADS
3154	1988, on DO Dra	46	dwarf nova, 166 papers in ADS

At the Konkoly Observatory, four former and present editors of IBVS work now. We close this contribution by mentioning the favourite paper of each of these editors.

Béla Szeidl: IBVS No. 23, ON THE LIGHT VARIABILITY OF THE OBJECT IDENTIFIED WITH THE RADIO SOURCE 3C-273, by Sharov and Efremov (3993 papers on this object in the ADS till the present). The promptness of IBVS made possible to the authors of IBVS No. 23. to be the first in publishing the discovery of the light variation of this well-known object. The note was published on 18 April, 1963. Soon after that, Dr. Harlan J. Smith (Yale University Observatory), in a letter to the editor of IBVS, Prof. L. Detre, announced that he and Miss Dorrit Hoffleit discovered the same. A note by Detre was published just a month later, on 18 May, 1963, about this independent discovery.

László Szabados: IBVS No. 5000, THE DRAMA OF ETA CARINAE, by C. Sterken.

Katalin Oláh: IBVS No. 122, ON THE VARIABILITY OF HD 234677, by Chugainov, 27 February, 1966. This star is known as BY Dra one of the most investigated active stars,

the type of the variable class is named after this object. The paper gives the first light curve of BY Dra, and derives its rotational period (Fig. 4). P.F. Chugainov published altogether 32 IBVS issues, mostly between 1965-1974. At that time IBVS gave the possibility to this talented observer and astronomer, to be seen and read by the community. A lot of his works unfortunately remain basically unknown in observatory bulletins written in Russian.

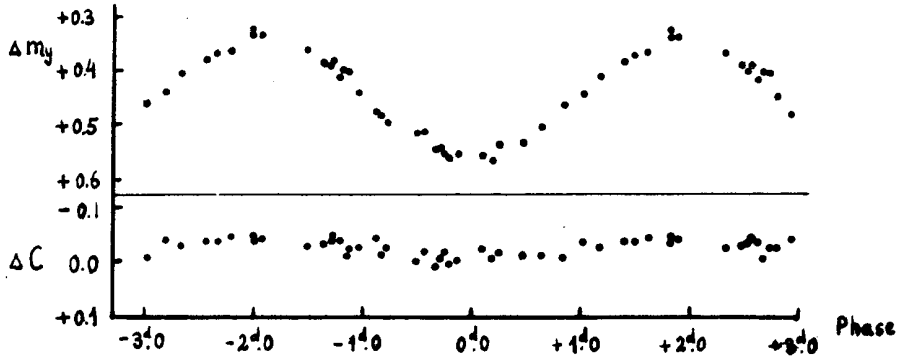

Figure 4. Chugainov's light curve of BY Dra, observed in 1965, from IBVS No. 122

Johanna Jurcsik IBVS No. 5819 (chosen from issues after No. 5000), THE EXTREME OUTBURST OF EX Lup IN 2008: OPTICAL SPECTRA AND LIGHT CURVE, by Kóspál et al., 10 March, 2008. This was the first note of an interesting event on the star (Fig. 5). Continuing the observations of the object, the same authors published a paper on EX Lup next year, in Nature.

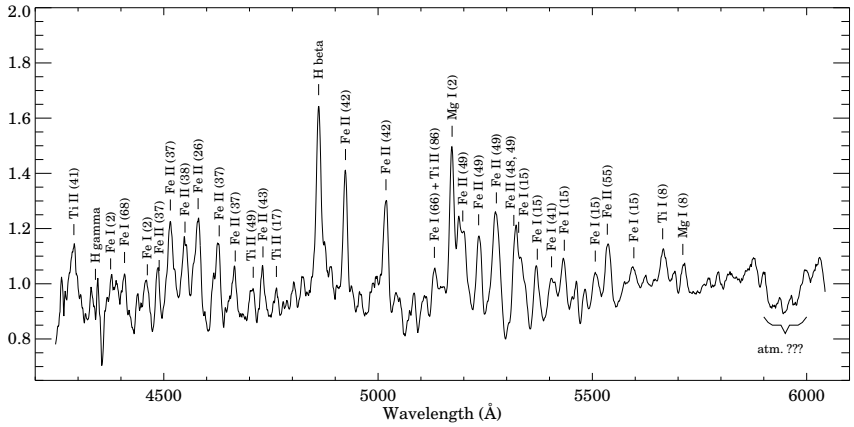

Figure 5. Average of 13 normalised spectra of EX Lup in 2008, from IBVS No. 5819, by Kóspál et al.

Such results as picked up by the editors, listed above, and many more, proves that our work was not in vain, and this small journal, the Information Bulletin on Variable Stars, has served the stellar astronomers well for half a century.

ELECTRONIC IBVS — THE PAST, PRESENT AND FUTURE

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The inspiration for creating the electronic version of the Information Bulletin on Variable Stars came from the AAS Newsletter Electronic Publishing Insert (1992), which the author picked up in the Sterrewacht Leiden. By that time IBVS was typeset in LaTeX and manuscripts were received by e-mail. Subscription fees were just about newly introduced for the previously free of charge Commission newsletter. The usefulness of a low cost distribution method (or rather a method which had no apparent costs at that time), and therefore with no subscription fee, as an alternative to the paper was instantaneously attractive. As the storage of back issues required considerable self-space by that time, electronic storage was foreseen as an important advantage for the future. The Director of Konkoly Observatory (a former Editor himself), the Editors and the Chairman of the Editorial Board were all supportive and enthusiastic.

As IBVS was small, and we did not have issues in HTML format at first (only PostScript), we were able to start the electronic edition before of the large astronomical journals, even before ApJL. The Electronic IBVS made its debut in August 1994, at the IAU General Assembly at The Hague. We realized later that IBVS must have been between the first 5000 websites (Gray, 1996; Zakon 2010). Though uploading the IBVS issues to the web required no extra costs, the digitization of back issues could not have been done without the help of paid and unpaid helpers: students, amateur astronomers, family members and some extra computer hardware was needed too. IBVS got financial support from the Hungarian National Information Infrastructure Program and through the Astronomy Research & Education Support. (Later we received grants from the Open Society Institute and the Ministry of Informatics and Communication too.) Soon we were able to serve back issues both in PostScript and plain text format, from issue No. 1. printed in 1961. In 2011 we reached the 6000th issue, and now we store - and make available to the readers - about 1300 data files.

We started providing HTML versions of the articles some years later, in 2000. The technology necessary for the feature-rich HTML version was developed with the help of CDS, Strasbourg. The most important feature of the hypertext issues were the reference links. The software - developed from a prototype written by François Ochsenbein - recognized the references in the LaTeX source, and produced BIBCODEs, which were used for linking to the CDS bibliographic pages (later it was changed to ADS). Now the system recognizes numerous name-variants of about 150 journals. Furthermore, DOIs, arXiv preprint identifiers and VizieR dataset identifiers are recognized as well in the reference section.

The next step was adding object links: with the help of LaTeX macros. We decided to provide object links for the ,,target" star(s) only, opposed to the choice of linking each object mentioned in the text. For a while we provided object links to each star appearing in text tables, but this practice was discontinued. The object meta-data were moved to the electronic versions of the tables. To the main SIMBAD object links later other object

links to other databases joined (to GCVS, NED, WEBDA). We developed linking to the WFPDB as well.

The most sophisticated linking is with the CDS Aladin service. We use Aladin as a third-party data visualization tool. Starlists in IBVS can be displayed using Aladin, and also all the finding charts can be compared with Aladin images centered on the given variable. Star lists are handed over to Aladin in VOTable format.

Linking is done in both ways - to facilitate linking from CDS databases and ADS, we report extracted meta-data (including object names) automatically upon article publication. Efforts were taken to ensure that the electronic GCVS, the NED and WEBDA databases have correct links if they refer to IBVS.

Another important concept used in the electronic IBVS is article disassembly. Readers are often interested only in a figure or table, or, at least, want to find an article which contains a figure - say, a finding chart - or has an accompanying data file. All figures and data files, and several tables replicated as data files, can be accessed individually. Furthermore, all figures and data files have their own meta-data. This opens the way for the use of advanced search tools. One can search for a light curve of a particular star, or minimum timings for another. In our terminology the latest IBVS search tool is called ,,semantic", because it can search for objects or authors, not only character strings. The users can opt for local or external name resolution. We have dictionaries for author name and object name variants, but ADS and SIMBAD or GCVS could be queried for author and object name aliases, respectively. All returned name variants are searched for then in the text. (One missing feature is standardization of the names strings used - at the moment we cannot handle subtle variations of the same name, as the presence or omission of a leading zero, or the use of a non-standard punctuation in a GSC number.)

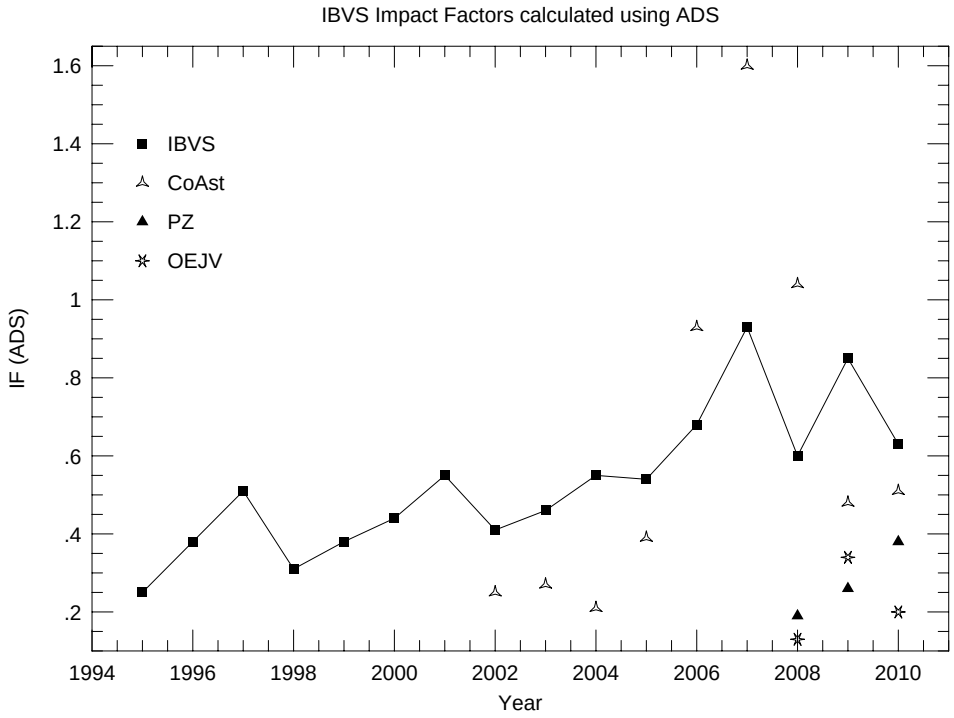

Figure 6. ADS impact factors of IBVS and some other journals. These metrics are calculated with the same algorithm as the IF, but using the ADS database (April 6th, 2011).

IBVS is an Open Access journal - though adopts the less liberal ,,gratis" OA model. We believe the right to redistribute IBVS papers on the Web belongs to those which can claim rights to the particular article: the author(s), their employers, their funding agencies. This also implies that the journal cannot be redistributed (copied to another, publicly accessible place) in its entirety. On the other hand, we are looking for a partner to provide an external, dark archive - ADS would be the most natural choice, maybe CDS for the data files. The journal is listed in the DOAJ, and indexed by Scopus (and has, accordingly, a SJR ranking). Obtaining a DOI for the published articles would be an important step forward - but it is not clear how the necessary costs could be covered. We do not have an Impact Factor at the moment - but using the ADS database we can estimate the impact using the same algorithm as Thomson Reuters does. The results (see Fig. 6) are not unfavorable, especially if we compute the same metrics for the journals of similar subjects and size: PZ, CoAst, OEJV.

In our plans for future technical developments, there are two obvious candidates: RSS feed for informing the readers about new issues and reports, and OAI-PMH meta-data distribution, which would provide an alternative method for informing ADS and could open-up IBVS towards general library services. There are further possibilities for technical innovation - there are some features IBVS can copy from other journals, and there might be others which this little journal could present to the world.

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Gray, M., 1996, http://www.mit.edu/people/mkgray/net/web-growth-summary.html
Zakon, R.H., 2010, http://www.zakon.org/robert/internet/timeline/

Figure 7. The first IBVS web server ,,ogyalla".

ASTRONOMY IN 1961

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Political conditions and historical events

The cold war continued to worsen in 1961. The confrontation of the two superpowers could be observed in almost every political event. The unsuccessful summit between Kennedy and Khrushchev resulted in the prompt construction of the Berlin Wall and underground nuclear tests by both the USA and the Soviet Union. There were many politically critical regions throughout the world.

• *In America:* US Cuban exiles and CIA carried out an unsuccessful attempt to overthrow Castro's regime that helped pave the way for the Cuban Missile Crisis (in 1962).

• *In Africa:* Colonial war of Angola with Portugal began. Forced by the British organization, Anti-Apartheid Movement, South Africa left the Commonwealth of Nations because of the apartheid politics emerged in that country. The turmoil in the Republic of Congo continued. UN Secretary General Dag H.A.C Hammarskjöld became a victim of a plane crash while traveling to Congo in relation to the UN peacekeeping operation.

• *In Asia:* India annexed the Portuguese colony Goa. Indonesia threatened West Irian which became a part of Indonesia later. Iraq claimed Kuwait when, following an exchange of notes with the United Kingdom, Kuwait became independent. The USA sent 18000 military advisors to South Vietnam which was the beginning of the Vietnam war.

• *In Europe:* Authorities of the German Democratic Republic closed the border between East and West Germany with a newly constructed wall. The Berlin Wall, symbolizing the "Iron Curtain" between Western Europe and the Eastern Bloc, was a barrier that completely cut off West Berlin from surrounding East Germany and from East Berlin.

Even the space race was motivated by the political confrontation between the USA and the USSR.

Other memorable political events in 1961

The Non-Aligned Movement (NAM) was founded.

Amnesty International (AI), an international non-governmental human rights organisation was also founded.

WWF (World Wide Fund for Nature) was conceived in 1961 under the name of World Wildlife Fund. WWF is an international non-governmental organization working on issues regarding the conservation, research and restoration of the environment.

The Antarctic Treaty System entered into force (eventually signed by 45 countries). The treaty was the first arms control agreement established during the cold war.

Major events of space research in 1961

In 1961 the USSR took the lead in the space race as Yuri Gagarin performed the first human spaceflight orbiting the Earth. Alan Shepard became the first American in space a month later, but he did not reach an orbital track during the mission.

The first planetary probe to Venus (Venera 1) was launched by the USSR in 1961. After discovering the solar wind with Luna 2 in 1959, Venera 1 verified that this plasma was uniformly present in the inner Solar System. In May Venera 1 passed within 100000 km of Venus and entered a heliocentric orbit, but the scheduled telemetry session near Venus approach failed to occur. Venera 1 was a milestone in spacecraft design: it was the first modern planetary probe: during most of its flight, it was spin stabilized and it was the first spacecraft designed to perform mid-course corrections, by entering a mode of 3-axis stabilization, fixing on the Sun and the star Canopus.

The new Ranger series was the first US attempt to obtain close-up images of the lunar surface. The Ranger spacecraft were designed to fly straight down towards the Moon and send images back until the moment of impact. The first successful probe in this series was Ranger 7 in 1964.

Gamma-ray astronomy was born in 1961: Explorer 11 satellite carried the first gamma-ray telescope into Earth's orbit. Explorer 11 could not be actively directed, the spacecraft rotated and scanned the sky, and the detector gathered 22 cosmic gamma-ray photons during its six month active lifetime.

Major events and results in astronomy in 1961

Total solar eclipse. The main celestial event of the year was the total solar eclipse occurred on February 15, 1961. The path of totality crossed South Europe and the Crimean peninsula. The maximum duration of the phase of totality was $2^{\rm m}\,45^{\rm s}$. Many European countries organized expeditions to some Southern European location to make scientific observations during the event.

First radar echo from Venus. The radar echo from Venus was unambiguously detected for the first time by Jet Propulsion Laboratory (JPL) in 1961. Based on the radar echo data, the correct distance of Venus from the Earth, as well as the distance scale of the Solar System could be accurately determined. This was an essential step for calculating the orbital tracks of planetary space missions. Rotation period and gross surface properties of Venus could be also determined.

Lazarev meteorite. Antarctica provides a large surface area (14 million km^2) for potential meteorite impact and acts as a huge collector, concentrator and preserver of meteorites. Antarctica is currently the most productive region of the Earth for the recovery of meteorites and about 10000 specimens have been found there (Graham & Annexstad, 1989). The Lazarev meteorite was found by Soviet geologists, M. G. Ravich and B. I. Revnov in the Lazarev region of Humboldt Mountains, at an altitude of about 3000 m above sea level in 1961. This was the second meteorite recovered on the icy surface and it is one of several chemically ungrouped pallasites. Lazarev's terrestrial age is estimated to be 5 million years. A part of the Lazarev meteorite is on exhibit in the British Museum.

Pioneering work in infrared astronomy. Harold Johnson defined the first infrared magnitude system, and between 1959 and 1961 he built the first near-infrared photometers covering the R, I, J, K, and L bands, extending the available infrared spectral region out to a wavelength of 4 micrometers. Johnson measured more than 50 stars in these new near infrared bands, providing useful information on the radiation from cool stars. The observations led to revised effective temperatures and bolometric corrections for stars of spectral class F5 and later: the temperatures became somewhat higher, while the bolometric corrections became considerably smaller than thought before for late-type stars (Johnson, 1962).

Frank Low was one of the pioneers of infrared astronomy. In 1961 he invented the

gallium-doped germanium bolometer, the first really sensitive infrared detector for the thermal infrared. This instrument was hundreds of times more sensitive than previous detectors and capable of detecting far-infrared radiation. This invention paved the way for development of modern infrared astronomy (Low et al., 2007).

The neglected bright supernova SN 1961H. One supernova from among 22 SNe discovered in 1961, SN 1961H in NGC 4564, has remained memorable because of two reasons. This was the second supernova discovered by an amateur astronomer (Giuliano Romano – later on he became a professional astronomer). In the list of brightest extragalactic supernovae ever discovered, SN 1961H is on the 10th place with its visual peak brightness of 11.2 magnitude. Although having such a high maximum brightness, SN 1961H was neglected: only 3 spectra have been obtained (Bertola, 1962). The light curve of SN 1961H is also rather scanty (Romano, 1962). For astronomers of our century, it is hardly understandable why their predecessors were not interested in a phenomenon so cardinal in the study of the Universe.

Selected other achievements in astronomy

Horace Babcock (1961) proposed a qualitative model for the sunspot cycle. The Babcock Model offers an explanation for the magnetic and sunspot patterns observed on the Sun. The model involved twisting of the solar magnetic fields due to solar latitudinal differential rotation.

Imre Izsák, a Hungarian born astronomer, published results of his calculations on the shape of Earth and its surface based on the observed irregularities in the motion of artificial satellites. His paper (Izsák, 1961) made him world renowned among astronomers and fertilized the classical discipline of celestial mechanics.

Brightness variations in a faint and seemingly uninteresting variable star, later on designated as BL Boo, were discovered by Kurochkin (1961). Decades later, BL Boo became the archetype of anomalous Cepheids, an extremely metal deficient variety of Cepheid variables.

Frank Drake conceived the now well-known formula about the possible frequency of occurrence of alien civilisations. The equation that bears Drake's name was publicly shown during a meeting at Green Bank, in 1961.

The anthropic principle was introduced by Robert Dicke (1961).

Seminal astronomy books published in 1961

Sandage, A. R.: Hubble Atlas of Galaxies. Washington DC: Carnegie Inst. Edwin Hubble wanted to prepare an 'Atlas of Galaxies' in order to visualize each subdivision of his classification. This work was not completed, only his remarks on the negative plates and fragments of the manuscript were prepared. Alan Sandage, knowing Hubble's plans, created this classic atlas in 1961 using some 200 reproduction of historical plates of Mount Wilson and Palomar Observatories.

Pannekoek, A.: A History of Astronomy. London. Allen & Unwin The most complete textbook on the general history of astronomy covering the development and achievements of astronomy over the millenia up to the mid 20th century.

New observing equipments

The largest radio telescope of 305 m diameter in Arecibo (Puerto Rico) was constructed between 1960 and 1963.

The largest heliostat in the world was built in 1960-1962. McMath-Pierce Solar Telescope is a 1.6 m $f/54$ solar telescope at Kitt Peak National Observatory (Arizona, USA) at an altitude of 2096 m. The first light was obtained in 1962.

The primary instrument of the Parkes Observatory (New South Wales, Australia) was inaugurated in 1961. The 64-m movable dish telescope is now the second largest radio telescope in the southern hemisphere. Scientific highlights of observations with this telescope include: the identification of the first known quasar (1963); comprehensive catalogues of the radio sky at different frequencies.

The construction of Piszkéstető Mountain Station of the Konkoly Observatory started in 1958. An important event happened in the timeline in 1961: building of the dome of the first telescope, the 60/90/180 cm Schmidt camera was finished. The first light was obtained with the Schmidt telescope in 1962.

The IAU General Assembly in Berkeley and the foundation of the IBVS

The XIth General Assembly of the International Astronomical Union was held in Berkeley (CA, USA) in August 1961. There were almost 950 members and guests of the IAU from 36 countries taking part in the convention. The titles of the invited discourses clearly demonstrate which were the research fields achieving a breakthrough in the early 1960s: "Dynamics, composition and origin of the geomagnetically trapped corpuscular radiation" by James A. Van Allen, "Stellar evolution" by Martin Schwarzschild, and "Problems of extragalactic research" by Victor A. Ambartsumian, who was elected to be the President of the IAU by the GA. The acting Secretary General, Donald H. Sadler, was re-elected.

It was this General Assembly where the IBVS was conceived. During the business meeting of the Commission 27, participants accepted László Detre's (Director of the Konkoly Observatory) suggestion concerning setting-up a new publication for rapid dissemination of information important for variable star astronomers. These bulletins have been edited and published at the Konkoly Observatory ever since.

Epilogue

In 1961 only the No. 1 of the Bulletin appeared. During the subsequent 50 years, 6000 issues of the IBVS were published.

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